

What Is Claimed Is:

1. A ball grid array (BGA) package, comprising:
a stiffener/heat spreader;

5 a substrate that has a first surface and a second surface, wherein said substrate has a central window-shaped aperture that extends through said substrate from said first substrate surface to said second substrate surface, wherein said first substrate surface is attached to a surface of said stiffener/heat spreader, wherein a portion of said stiffener/heat spreader is accessible through said central window-shaped aperture;

10 an IC die that has a first surface and a second surface, wherein said first IC die surface is mounted to said accessible portion of said stiffener/heat spreader; and

15 a drop-in heat spreader that has a surface that is mounted to said second IC die surface.

2. The package of claim 1, further comprising:
a plurality of solder balls attached to said second substrate surface.

3. The package of claim 1, wherein said drop-in heat spreader is configured to dissipate heat generated by said IC die.

20 4. The package of claim 1, wherein said second IC die surface includes a contact pad, further comprising:

a wire bond that couples said contact pad to said drop-in heat spreader.

5. The package of claim 4, wherein a second surface of said drop-in heat spreader is configured to be attached to a printed circuit board.

10 said drop-in heat spreader is configured to mount to the center of said second IC die surface.

13. The package of claim 1, wherein said IC die and said drop-in heat spreader are encapsulated.

5 14. The package of claim 1, wherein said IC die and a portion of said drop-in heat spreader are encapsulated, wherein a second surface of said drop-in heat spreader is exposed.

10 15. The package of claim 14, wherein said drop-in heat spreader includes a circumferential surface between said first and said second drop-in heat spreader surfaces, wherein said circumferential surface is at least partially exposed.

16. The package of claim 1, wherein said substrate is a tape substrate.

17. The package of claim 1, wherein said stiffener/heat spreader and said drop-in heat spreader have the same thermal expansion coefficient.

15 18. A method of assembling a ball grid array (BGA) package, comprising the steps of:

providing a substrate that has a first surface and a second surface, wherein the substrate has a central window-shaped aperture that extends through the substrate from the first substrate surface to the second substrate surface;

20 providing a stiffener/heat spreader;

attaching a surface of the stiffener/heat spreader to the first substrate surface, wherein a portion of the stiffener/heat spreader is accessible through the central window-shaped aperture;

IC die surface.

30. The method of claim 18, further comprising the step of: encapsulating the IC die and the drop-in heat spreader.

31. The method of claim 30, wherein said encapsulating step comprises the step of:
5 exposing a surface of the drop-in heat spreader.

32. The method of claim 31, wherein said exposing step comprises the step of:
10 exposing at least a portion of a circumferential surface of the drop-in heat spreader.

33. The method of claim 18, wherein the substrate is a tape substrate, wherein said substrate providing step comprises the step of:
15 providing the tape substrate.

34. The method of claim 18, further comprising the step of:
20 matching a thermal expansion coefficient of the stiffener/heat spreader to the thermal expansion coefficient of the drop-in heat spreader.

35. A system for assembling a ball grid array (BGA) package, comprising:

20 means for providing a substrate that has a first surface and a second surface, wherein the substrate has a central window-shaped aperture that extends through the substrate from the first substrate surface to the second substrate surface;

means for providing a stiffener/heat spreader;

means for attaching a surface of the stiffener/heat spreader to the first

substrate surface, wherein a portion of the stiffener/heat spreader is accessible through the central window-shaped aperture;

means for mounting a first surface of an IC die to the accessible portion of the stiffener/heat spreader; and

5 means for mounting a surface of a drop-in heat spreader to a second surface of the IC die.

36. The system of claim 35, wherein the substrate is a tape substrate, wherein said substrate providing means comprises:

means for providing the tape substrate.

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